

What is claimed is:

1. A computer interactive system, wherein a user's question is recognized and a system's answer is outputted, comprising:

- 5 a recognition unit for recognizing said question;
 a selection unit for selecting said answer;
 an evaluation unit for evaluating a dialog between said user and system under a prescribed criterion and determining whether or not to continue said dialog; and
10 an output unit for outputting said answer or a statement for continuing or ending said dialog.

2. The interactive system according to claim 1, wherein:

- said evaluation unit evaluates a consistency of said
15 dialog; and
 said output unit outputs said answer and/or a system's response.

3. The interactive system according to claim 1, wherein a question by a user's voice is recognized and a
20 system's answer is outputted by voice synthesize, comprising:

- a voice recognition unit for recognizing said question;
 a selection unit for selecting said answer;
 an evaluation unit for evaluating a dialog between said
25 user and system under a prescribed criterion and determining whether or not to continue said dialog; and
 a voice synthesize unit for outputting said answer or a statement for continuing or ending said dialog.

4. The interactive system according to claim 3, wherein:

said evaluation unit evaluates a consistency of said dialog; and

5 said voice synthesize unit outputs said answer and/or a system's response.

5. The interactive system according to claim 4, wherein said evaluation unit evaluates an error in said question from said user, an error by said voice recognition
10 unit, or an error in the evaluation of said dialog.

6. The interactive system according to claim 4, wherein said prescribed criterion is at least one of a user profile, a probability of using a word, voice characteristics, a time lapse for a response from said user, a response speed
15 of said user and a dialog circumstance.

7. The interactive system according to claim 4, wherein said voice recognition unit recognizes said question from said user with robustness.

8. The interactive system according to claim 7,
20 wherein said voice recognition unit recognizes an accent or tone of said user.

9. The interactive system according to claim 7, wherein said voice recognition unit excludes a monologue of said user.

25 10. The voice recognition system according to claim 7, wherein said voice recognition unit recognizes said question from said user with a high response speed.

11. The interactive system according to claim 4,

wherein said evaluation unit further determines whether or not to allow an error of said user, to compromise with said user, or to interrogate said user.

12. The interactive system according to claim 4,
5 wherein said selection unit further selects a speech pattern including the selected answer.

13. The interactive system according to claim 4, wherein, said selection unit intentionally selects a wrong answer.

10 14. The interactive system according to claim 13, wherein:

said interactive system is a verses capping systems;
and

said voice synthesize unit outputs a statement
15 manifesting a defeat of said voice interactice system.

15. The interactive system according to claim 4, which further comprises a vocabulary data base for storing a series of vocabularies in an order of use frequency,

wherein said selection unit selects for said answer one
20 of said vocabularies of the highest use frequency.

16. The interactive system according to claim 4, which further comprises a response estimation unit for foreseeing a response from said user,

wherein said selection unit selects for said answer on
25 the basis of the foreseen result.

17. The interactive system according to claim 4, which further comprises a timer for counting a prescribed time lapse after completing said answer,

wherein:

said selection unit selects a hint after said prescribed time lapse; and

said voice synthesize unit outputs said hint.

5 18. The interactive system according to claim 4, which further comprises a difficulty degree set-up unit for fixing an intellectual level of said dialog,

wherein:

10 said selection unit selects said answer on the basis of said difficulty degree.

19. The interactive system according to claim 3, wherein:

said evaluation unit evaluates a circumstance of said dialog;

15 said selection unit selects and combines on the basis of the determination result said answer together with one of a plurality of dialog sentences for preventing said user from being displeased; and

20 said voice synthesize unit outputs the combined sentence.

20. The interactive system according to claim 19, said selection unit randomly selects one of said dialog sentences.

25 21. The interactive system according to claim 19, which further comprises a timer for counting a response time from said user;

wherein said selection unit selects one of said dialog sentences on the basis of said response time.

22. The interactive system according to claim 19,
wherein:

said answer is a word; and

said word is stored together with its head and ending.

5 23. The interactive system according to claim 22,
wherein said word and its head and ending is described by
XML format.

24. The interactive system according to claim 19,
which further comprises a counter for counting a number of
10 round trip dialogs,

wherein said selection unit selects a wrong answer for
the system's being defeated by said user, when said
number becomes a prescribed number.

25. The interactive system according to claim 24,
15 wherein said prescribed number is randomly changed.

26. The interactive system according to claim 19,
which further comprises another timer for counting a time
lapse from a beginning of said dialog,

20 wherein said selection unit selects a wrong answer for
the system's being defeated by said user, when said time
lapse becomes a prescribed time lapse.

27. The interactive system according to claim 26,
wherein said prescribed time lapse is randomly changed.

28. The interactive system according to claim 19,
25 wherein said selection unit selects a wrong answer for the
system's being defeated by said user, when a word or its
ending of said question from said user is a prescribed word
or ending.

29. The interactive system according to claim 28, wherein said prescribed word is randomly changed.

30. The interactive system according to claim 19, wherein said voice synthesize unit awaits without
5 outputting said answer a response from said user, even when said evaluation unit determined that the ending of said question from said user is wrong.

31. The interactive system according to claim 30, which further comprises another timer for counting a time
10 lapse after completing outputting said answer, wherein said voice synthesize unit outputs a statement for prompting said user to respond.

32. The interactive system according to claim 19, which further comprises a genre decision unit for selecting
15 a field of topic, wherein said selection unit selects said answer within the decided genre.

33. The interactive system according to claim 19, which further comprises a starter decision unit for deciding
20 which starts said dialog.

34. The interactive system according to claim 19, wherein said voice synthesize unit outputs said answer after a prescribed time interval after recognizing said
25 question of said user, when a word of said answer begins from a prescribed head.

35. The interactive system according to claim 19, wherein said voice synthesize unit outputs said answer

after a prescribed time interval after recognizing said question of said user, when said answer is one of prescribed words.

36. The interactive system according to claim 19,
5 wherein when the system is defeated by said user:

said selection unit selects one of words with a prescribed ending; or

if there is not a word with said prescribed ending, said selection unit selects one of statements manifesting the
10 system's defeat.

37. The interactive system according to claim 3, which further comprises a learning unit for:

interrogating by using said voice synthesize unit, said user about said question from said user of which answer is
15 not yet known to the system; and

storing an answer of said question and scenario regarding the interrogation.

38. The interactive system according to claim 37, which further comprises a updating unit for updating and
20 accumulating the answer words and scenarios obtained by said interrogation.

39. The interactive system according to claim 37, which further comprises a memory for storing a hysteresis of similar dialogs,

25 wherein said updating unit chooses one of said scenarios which is most frequently used, when said scenarios are not consistent with each other.

40. The interactive system according to claim 39,

wherein said updating unit chooses an earlier scenario, when said scenarios are used at the same probability.

41. The interactive system according to claim 37, wherein said selection unit selects the system's response
5 among said words and scenarios in accordance with a content of the user's response.

42. The interactive system according to claim 41, which further comprises a sentiment recognition unit for analyzing the user's sentiment on the basis of the
10 recognized user's voice,

wherein said selection unit changes a tone for a selected system's response in accordance with said user's sentiment.

43. The interactive system according to claim 42,
15 wherein:

said sentiment recognition unit analyzes whether said user's sentiment is directed to the system or a general affair; and

said selection unit changes a tone for a selected
20 system's response in accordance with the analysis result.

44. The interactive system according to claim 41, which further comprises a provincialism recognition unit for recognizing a provincialism of said user,

wherein said selection unit changes a tone for a
25 selected system's response.

45. The interactive system according to claim 44, wherein said selection unit selects a system's response in accordance with local area of said provincialism.

46. The interactive system according to claim 41,
which further comprises a language recognition unit ,
wherein said selection unit changes a tone for a
selected system's response.

5 47. The interactive system according to claim 44,
wherein said selection unit selects the system's response in
accordance with a country of said provincialism.

48. The interactive system according to claim 37,
which further comprises a user's attribute determination
10 unit for determining a user's attribute on the basis of a
voice quality of said use,

wherein said selection unit changes said voice quality
for a selected system's response in accordance with said
attribute.

15 49. The interactive system according to claim 37,
which further comprises another user's attribute
determination unit for determining a user's attribute on
the basis of a user's figure,

wherein said selection changes a voice quality for a
20 selected system's response in accordance with said
attribute.

50. The interactive system according to claim 48,
wherein said selection unit selects the system's response in
accordance with said attribute.

25 51. The interactive system according to claim 44,
wherein said selection unit selects the system's response in
accordance with said attribute.

52. The interactive system according to claim 37,

which further comprises an image recognition unit for executing a lip reading on the basis of an image pick-up of a lip motion,

wherein said image recognition unit together with said
5 voice recognition unit execute a recognition of user's voice.

53. The interactive system according to claim 37, wherein:

the system is a robot which comprises a plurality of cameras for picking up an image of user's face, thereby
10 deciding a direction of said user's face; and

said voice recognition unit starts executing a voice recognition, when said user's face is directed to said robot.

54. The interactive system according to claim 53, wherein:

15 said plurality of cameras are disposed around a head of said robot, thereby determining whether or not said user's face is directed to said robot;

said voice recognition unit starts voice recognition , when said user's face become directed to said robot.

20 55. The interactive system according to claim 53, wherein:

a plurality of directional microphones are disposed around a head of said robot, thereby determining whether or not said user's face is directed to said robot;

25 said voice recognition unit starts voice recognition, when said user's face become directed to said robot.

56. The interactive system according to claim 54, wherein said robot directs in front of said user's face.

57. The interactive system according to claim 55, wherein said robot directs in front of said user's face.

58. A computer program for operating an interactive system, wherein a user's question is recognized and a
5 system's answer is outputted, comprising the subroutines of:

a recognition subroutine for recognizing said question;

a selection subroutine for selecting said answer;

10 an evaluation subroutine for evaluating a consistency of a dialog between said user and system under a prescribed criterion and determining whether or not to continue said dialog; and

an output subroutine for outputting said answer or a statement for continuing or ending said dialog.